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HUNG, YUBIN	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/007,333	DONER, JOHN R.	
	Examiner	Art Unit	
	Yubin Hung	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 January 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/19/2005 has been entered.

2. Applicant's amendment has rendered moot the rejections under35 U.S.C. 103. However, upon further consideration, a new ground(s) of rejection is made. See below.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jaisimha et al. ("Data Compression Techniques for Maps," IEEE Proceedings, 1989 SoutheastCon, pp. 878-883) and Mairs et al. (US 6,304,928).

5. Regarding claim 1, Jaisimha discloses

- (a) scanning the pixels line by line; (b) assigning a first instruction to a plurality of successive pixels depicting the image background, wherein the first instruction indicates the number of successive background pixels
[P. 880, the section entitled "Run-length encoding." Note that the run-length code for the largest homogeneous region (considered as the background) is considered as the first instruction]

Jaisimha does not expressly disclose

- (c) assigning a second instruction to a plurality of successive data pixels, wherein the second instruction comprises a first bit field indicating the number of successive colored data pixels, and comprises a second bit field for each colored data pixel, wherein contents of the second bit field indicate the color of the associated colored data pixel, and wherein the second bit field can specify any of the n colors for each one of the plurality of successive data pixels, and wherein a length of the second instruction is variable as determined by the number of successive colored data pixels and the number of bits required to designate one of the n different colors for each colored data pixel

However, Mairs teaches coding a run of color pixels using a format (i.e., instruction) that satisfies the limitations of the second instruction recited above. [Figs. 24A-24C and 25; Col. 16, line 24-Col. 18, line 15. Note that the format for color image in Table 1 includes a first bit field indicating the run length and a second, multi-byte bit field that contains the colors of the pixels in the run (packed two pixels to a byte because in this instance each color is described by a 4-bit value, see Col. 16, lines 21-24).]

Jaisimha and Meirs are combinable because they both have aspects that are from the same field of endeavor of data compression/decompression.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify Jaisimha with the teaching of Mairs by coding the non-background color runs using the color image format of Mairs. The motivation would have been to be able to more efficiently encode (i.e., using fewer bits) the kind of map images in which most of the non-background data are sparse (e.g., consisting of blobs of only a few pixels in size or of runs in each of which the pixels have different colors).

Therefore, it would have been obvious to combine Mairs with Jaisimha to obtain the invention as specified in claim 1.

Regarding claim 5, Mairs further discloses

- determining the color of each successive data pixel and appending a bit field to the second instruction, wherein each one of the plurality of bit fields identifies the color for one or more of the successive data pixel
  [Col. 17, the format for color image in Table 1]

6. Regarding claim 6,the combined invention of Jaisimha and Meirs discloses all limitations of its parent, claim 5.

The combined invention of Jaisimha and Meirs does not expressly disclose

- wherein the number of bits in each one of the pluralities of bit fields is determined by the number of colors to be displayed in the graphical image

However, at the time of the invention it would have been obvious to one of ordinary skill in the art to use only the minimum number of bits required to encode the given number of colors. (In this way the number of bits used is determined by the number of colors). The motivation would have been to minimize the resulting data amount.

7. Regarding claim 7, Meirs further discloses

- the number of bit fields is equal to the number of successive data pixels indicated by the second instruction
  [Col. 17, the format for color image in Table 1. Note that each bit filed is 4 bits long (see Col. 16, lines 21-24)]

***

8. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jaisimha et al. ("Data Compression Techniques for Maps," IEEE Proceedings, 1989 SoutheastCon, pp. 878-883) and Mairs et al. (US 6,304,928) as applied to claims 1 and 5-7 above, and further in view of Matsushiro (US 6,301,300).

Regarding claim 2, the combined invention of Jaisimha and Meirs discloses all limitations of its parent, claim 1.

The combined invention of Jaisimha and Meirs does not expressly disclose the following:

- (b1) determining the number of successive lines comprising only background pixels
- (b2) assigning a third instruction representing the number of successive lines determined
  at step (b1)
- (b3) determining the number of successive background pixels less than one line in length
- (b4) assigning a fourth instruction representing the number of successive background pixels determined at the step (b3)

However, in [Figs. 1A, 1B; Col. 3, line 57 – Col. 4, line 5] Matsushiro teaches determining the number of background-only lines (i.e., white lines) and assigning a code (OFFSET, i.e., the third instruction) resenting that number.

In addition, Matsushiro teaches determining runs that are shorter than a line and assigning to each run its start and end positions (i.e., the fourth instruction *representing* the number of successive pixels). Although the runs Matsushiro considers are data runs, not the background runs as recited in the claim, it would have been obvious to one of ordinary skill in the art that for a line containing both data and background pixels, whether it is the data runs or background runs are encoded is a matter of design choice. Applicant has not disclosed that encoding background runs provides an advantage, is

used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with encoding data runs instead because except when data pixels are at both the beginning and the end of a line, the number of data runs in that line is no greater than the number of background runs.

The combined invention of Jaisimha and Meirs is combinable with Matsushiro because they both have aspects that are from the same field of endeavor of data compression/decompression.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Jaisimha and Meirs with the teachings of Matsushiro by counting the number of successive all-background lines and the lengths of runs in a mixed line (i.e., a line with both data and background pixels) and assign different instructions to each. The motivation would have been to further improve the coding efficiency by not having to allocate code for each all-background line.

Therefore, it would have been obvious to combine Matsushiro with Jaisimha and Meirs to obtain the invention as specified in claim 2.

***

9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jaisimha et al. ("Data Compression Techniques for Maps," IEEE Proceedings, 1989 SoutheastCon, pp. 878-883), Mairs et al. (US 6,304,928) and Matsushiro (US 6,301,300) as applied to claim 2 above, and further in view of Imade et al. (US 5,872,864).

Regarding claim 3, the combined invention of Jaisimha, Meirs and Matsushiro discloses all limitations of its parent, claim 2.

The combined invention of Jaisimha, Meirs and Matsushiro does not expressly disclose the following:

- determining the number of background pixels between two data pixels in a single line of pixels
- assigning a fifth instruction if the number of successive background pixels is less than a predetermined value
- assigning a sixth instruction if the number of successive background pixels is greater than the predetermined value

However, Imade discloses identifying short white (considered as background) runs and replacing their color with that of the data (black). [See Col. 17, lines 59-66.] The replacement is considered the fifth instruction. Note that after all short run background runs are replaced, the remaining background runs are all longer than the predetermined value and therefore the first instruction now is equivalent to the sixth instruction.

Note that whether a separate sixth instruction is assigned is obviously a design choice since at this point the a background run assigned a first instruction must have a length greater than a predetermined value, exactly what the sixth instruction is to convey. Therefore, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to use only the first instruction. Applicant has not disclosed that using a separate sixth instruction provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with the first instruction alone because both instructions perform the same function of describing a background run that is longer than a predetermined number.

Imade and the combined invention of Jaisimha, Meirs and Matsushiro are combinable because they both have aspects that are from the same field of endeavor of image processing.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Jaisimha, Meirs and Matsushiro with the teachings of Imade by identifying short white (background) runs and replacing their color with black, the color of data (with the replacement being considered the fifth instruction) as well as assigning a sixth instruction to the remaining background runs (i.e., those background runs with a length greater than a predetermined value). The motivation

would have been to smooth the image by removing speckles of background pixels (white pixels) to enhance the visual effect as well as to improve compression results.

Therefore, it would have been obvious to combine Imade with Jaisimha, Meirs and Matsushiro to obtain the invention as specified in claim 3.

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10. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jaisimha et al. ("Data Compression Techniques for Maps," IEEE Proceedings, 1989 SoutheastCon, pp. 878-883), Mairs et al. (US 6,304,928), Matsushiro (US 6,301,300) and Imade et al. (US 5,872,864) as applied to claim 3 above, and further in view of Tateyama (US 5,515,077).

Regarding claim 4, the combined invention of Jaisimha, Meirs, Matsushiro and Imade discloses all limitations of its parent, claim 3.

The combined invention of Jaisimha, Meirs, Matsushiro and Imade does not expressly disclose

- the predetermined value is 64, and wherein the fifth instruction comprises an eight bit byte, and wherein the first and the second bits identify the instruction type and the third through the eighth bits identify the number of successive background pixels, and wherein the sixth instruction comprises two eight bit bytes, and wherein the first and the second bits identify the instruction type and the third through the sixteenth bits identify the number of successive background pixels

However, Tateyama discloses data formats (either 1 or 2 bytes long) consisting of two fields of different bit lengths with one indicating the mode (considered as instruction type) and the other the run length. [See Fig. 32.] Note that the number of bits allocated to run length determines the size of the pre-determined value. (E.g., in 16-color mode, 4 bits are allocated to run length and the predetermined value is therefore 16.)

Moreover, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have a pre-determined value of 64 (i.e., 6 bits) and to allocate two bits to the instruction type (i.e., mode). Applicant has not disclosed that using such allocation (of 2 bits and 6 bits) provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with either the bit allocation taught by Tateyama or the claimed bit allocation because both allocations perform the same function of specifying the instruction type (i.e., mode) and the length of the run.

Tateyama and the combined invention of Jaisimha, Meirs, Matsushiro and Imade are combinable because they both have aspects that are from the same field of endeavor of image processing.

Therefore, it would have been obvious to of ordinary skill in this art to modify Tateyama with the 2-bit/6-bit allocation to obtain the invention as specified in claim 4.

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11. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jaisimha et al. ("Data Compression Techniques for Maps," IEEE Proceedings, 1989 SoutheastCon, pp. 878-883) and Mairs et al. (US 6,304,928) as applied to claims 1 and 5-7 above, and further in view of Cullen et al. (US 5,781,665).

Regarding claim 8, the combined invention of Jaisimha and Meirs discloses all limitations of its parent, claim 1.

The combined invention of Jaisimha and Meirs does not expressly disclose the following:

- reducing the graphical image size by deleting those pixels in one or more predetermined areas

However, Cullen discloses a method of cropping out predetermined areas of an image. [Fig. 1. Note that the non-facial areas are the predetermined areas.]

Cullen and the combined invention of Jaisimha and Meirs are combinable because they both have aspects that are from the same field of endeavor of data compression/decompression.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Jaisimha and Meirs with the teachings of Cullen by

cropping out predetermined areas of an image. The motivation would have been to remove unimportant areas of the images in order to reduce their sizes. (See Tables III and IV in Cols. 6 and 7, respectively of Cullen.).

Therefore, it would have been obvious to combine Cullen with Jaisimha and Meirs to obtain the invention as specified in claim 8.

***

12. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jaisimha et al. ("Data Compression Techniques for Maps," IEEE Proceedings, 1989 SoutheastCon, pp. 878-883) and Mairs et al. (US 6,304,928) as applied to claims 1 and 5-7 above, and further in view of Kelly (US 6,448,922).

13. Regarding claim 9, the combined invention of Jaisimha and Meirs discloses all limitations of its parent, claim 1.

The combined invention of Jaisimha and Meirs does not expressly disclose the following:

- the graphical image represents radar weather data

However, Kelly discloses on-board radar that acquires weather images. [Fig. 4A. Col. 5, lines 47-60.]

Kelly and the combined invention of Jaisimha and Meirs are combinable because they both have aspects that are from the same field of endeavor of image processing.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Jaisimha and Meirs with the teachings of Kelly by acquiring radar weather images. The motivation would have been to provide information for the all-important task of Weather forecasting.

Therefore, it would have been obvious to combine Kelly with Jaisimha and Meirs to obtain the invention as specified in claim 9.

14. Regarding claim 10, Kelly further discloses

- wherein the radar weather data comprises precipitation data, and wherein the precipitation intensity is indicated by the color assigned to each data pixel
  [Col. 3, lines 54-58; Col. 5, lines 47-60]

***

15. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jaisimha et al. ("Data Compression Techniques for Maps," IEEE Proceedings, 1989 SoutheastCon, pp. 878-883) and Mairs et al. (US 6,304,928) as applied to claims 1 and 5-7 above, and further in view of Imade et al. (US 5,872,864).

16. Regarding claim 11, the combined invention of Jaisimha and Meirs discloses all limitations of its parent, claim 1.

The combined invention of Jaisimha and Meirs does not expressly disclose the following:

- determining the number of successive data pixels in each plurality of data pixels, and if the number is less than a predetermined number in one or more of the plurality of data pixels, changing the color of each data pixel in the one or more of the plurality of data pixels to the background color

However, Imade discloses identifying short white (considered as data) runs and replacing their color with that of the background (black). [Col. 17, lines 59-66.]

Imade and the combined invention of Jaisimha and Meirs are combinable because they both have aspects that are from the same field of endeavor of image processing.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Jaisimha and Meirs with the teachings of Imade by identifying short white (i.e., data) runs and replacing their color with that of the background. The motivation would have been to smooth the image by removing speckles of data pixels (white pixels) to enhance the visual effect as well as to improve compression results.

Therefore, it would have been obvious to combine Imade with Jaisimha and Meirs to obtain the invention as specified in claim 11.

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17. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jaisimha et al. ("Data Compression Techniques for Maps," IEEE Proceedings, 1989 SoutheastCon, pp. 878-883) and Mairs et al. (US 6,304,928) as applied to claims 1 and 5-7 above, and further in view of Ozaki et al. (US 5,345,316).

18. Regarding claim 12, the combined invention of Jaisimha and Meirs discloses all limitations of its parent, claim 1.

The combined invention of Jaisimha and Meirs does not expressly disclose the following:

- assigning a line designator to one or more of the lines of pixels

However, Ozaki discloses adding an End-of-Line code (i.e., a line designator) to an encoded line. [See Col. 7, lines 13-18.]

Ozaki and the combined invention of Jaisimha and Meirs are combinable because they both have aspects that are from the same field of endeavor of image processing.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Jaisimha and Meirs with the teachings of Ozaki by

adding an End-of-Line code (i.e., a line designator) to an encoded line. The motivation would have been to be able to display an image properly after decoding.

Therefore, it would have been obvious to combine Ozaki with Jaisimha and Meirs to obtain the invention as specified in claim 12.

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19. Claims 13, 15, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jaisimha et al. ("Data Compression Techniques for Maps," IEEE Proceedings, 1989 SoutheastCon, pp. 878-883), Mairs et al. (US 6,304,928) and Matsushiro (US 6,301,300) as applied to claim 2, and further in view of Cullen et al. (US 5,781,665), Imade et al. (US 5,872,864) and Kelly et al. (US 6,448,922).

20. Regarding claim 13, it is similarly analyzed and rejected as per the analyses of claims 1, 2, 5, and 8-11. Specifically,

The combined invention of Jaisimha, Meirs and Matsushiro disclose/teach

- (b) scanning the pixels line by line
  [Per the analysis of claim 1]
- (d) assigning a first instruction representing the number of successive lines composed entirely of background pixels
  [Per the analysis of claim 2. Note that the first instruction here corresponds to the third instruction of claim 2]
- (e) determining the number of successive background pixels in a line
  [Per the analysis of claim 2]
- (f) assigning a second instruction representing the number of successive background pixels in a line
  [Per the analysis of claim 2. Note that the second instruction here corresponds to the fourth instruction of claim 2]

- (g) assigning a third instruction representing the number of successive data pixels in a line, wherein the third instruction comprises a first field representing the number successive data pixels and comprises a second field representing the color from the n different colors, of each successive data pixel, and wherein the second bit field can specify any of the n colors for each one of the plurality of successive data pixels, and wherein a length of the second instruction is variable as determined by the number of successive colored data pixels and the number of bits required to designate one of the n different colors for each colored data pixel
  [Per the analysis of claims 1 and 5. Note that the third instruction here corresponds to the second instruction of claim 1]
- (h) concatenating the first, second and third instructions to form the bit stream
  [Per the analysis of claim 5. Note that it is obvious to concatenate all instructions to produce the encoded data]

And Cullen, Imade and Kelly disclose/teach

- wherein the graphical weather image comprises a plurality of pixels for display, and wherein the plurality of pixels comprise background pixels all of a background color for depicting the image background and data pixels each having one of a plurality different colors, and wherein the data pixel color represents the precipitation intensity
  [Per the analyses of claims 9 and 10]
- (a) deleting background and data pixels from predetermined areas of the image
  [Per the analysis of claim 8]
- (c) identifying data pixel segments within a line of pixels, wherein a data pixel segment comprises a plurality of successive data pixels, and wherein if there are less than a predetermined number of data pixels within the data pixel segment, changing the color of each data pixel within the data pixel segment to the background color
  [Per the analysis of claim 11]

Cullen, Imade and Kelly are combinable with the combined invention of Jaisimha, Meirs and Matsushiro because they all have aspects that are from the same field of endeavor of image processing.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Jaisimha, Meirs and Matsushiro with the teachings

of Cullen, Imade and Kelly by deleting data from predetermined portion as well as identifying short white (i.e., data) runs and replacing their color with that of the background. The motivation would have been to reduce the image size as well as to enhance the visual effect and to improve compression results.

Therefore, it would have been obvious to combine Cullen, Imade and Kelly with Jaisimha, Meirs and Matsushiro, to obtain the invention as specified in claim 13.

21. Regarding claim 15, it is rejected because the combined invention of Jaisimha, Meirs and Matsushiro and Imade further teach/suggest

- determining whether the number of successive background pixels in a line is greater than a predetermined value; assigning the second instruction to represent the number of background pixels in the line when the number of successive background pixels is less than the predetermined value; and assigning a fourth instruction to represent the number of background pixels in the line when the number of successive background pixels is greater than the predetermined value
[Per the analysis of claim 3]

22. Regarding claim 17, it is rejected because it is a method for decoding the data stream resulting from the encoding method of claim 13 obtained by reversing the encoding operations and is therefore obvious.

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23. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jaisimha et al. ("Data Compression Techniques for Maps," IEEE Proceedings, 1989 SoutheastCon, pp. 878-883), Mairs et al. (US 6,304,928), Matsushiro (US 6,301,300),

Cullen et al. (US 5,781,665), Imade et al. (US 5,872,864) and Kelly et al. (US 6,448,922) as applied to claims 13, 15 and 17, and further in view of Fukumoto et al. (JP 2001-265316).

Regarding claim 14, the combined invention of Jaisimha, Meirs, Matsushiro, Cullen, Imade and Kelly discloses all limitations of its parent, claim 13.

The combined invention of Jaisimha, Meirs, Matsushiro, Cullen, Imade and Kelly does not expressly disclose

- wherein the graphical image weather data comprises geographical boundaries of a color different from both the background color and the data pixel colors, and further comprising the step of removing the geographical boundaries by changing the color representing the geographical boundaries to the background color

However, Fukumoto teaches using an image (a font image) having a character or graphic part (i.e., data), an outline part (i.e., boundary) and a background part. [See lines 6-7 of the English abstract.] Fukumoto further teaches eliminating outlines by changing their color to that of the background. [See lines 13-15.]

The combined invention of Jaisimha, Meirs, Matsushiro, Cullen, Imade and Kelly are combinable with Fukumoto because they both have aspects that are from the same field of endeavor of image processing.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Jaisimha, Meirs, Matsushiro, Cullen, Imade and Kelly with the teachings of Fukumoto by eliminating outlines by changing their color to that of the background. The motivation would have been to be able to display an image with a look that may be more pleasing to the viewers; user-friendliness will additionally be enhanced if this is offered as an option.

Therefore, it would have been obvious to combine Fukumoto with Jaisimha, Meirs, Matsushiro, Cullen, Imade and Kelly to obtain the invention as specified in claim 14.

***

24. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jaisimha et al. ("Data Compression Techniques for Maps," IEEE Proceedings, 1989 SoutheastCon, pp. 878-883), Mairs et al. (US 6,304,928), Matsushiro (US 6,301,300), Cullen et al. (US 5,781,665), Imade et al. (US 5,872,864) and Kelly et al. (US 6,448,922) as applied to claims 13, 15 and 17, and further in view of Ozaki et al. (US 5,345,316).

Regarding claim 16, the combined invention of Jaisimha, Meirs, Matsushiro, Cullen, Imade and Kelly discloses all limitations of its parent, claim 13.

The combined invention of Jaisimha, Meirs, Matsushiro, Cullen, Imade and Kelly does not expressly disclose the step of appending a line designator to the bit stream at the end of one or more pixel display lines.

However, per the analysis of claim 12 Ozaki teaches this limitation.

The combined invention of Jaisimha, Meirs, Matsushiro, Cullen, Imade and Kelly are combinable with Ozaki because they both have aspects that are from the same field of endeavor of image processing.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Jaisimha, Meirs, Matsushiro, Cullen, Imade and Kelly with the teachings of Ozaki by adding an End-of-Line code (i.e., a line designator) to an encoded line. The motivation would have been to be able to display an image properly after decoding.

Therefore, it would have been obvious to combine Ozaki with Jaisimha, Meirs, Matsushiro, Cullen, Imade and Kelly to obtain the invention as specified in claim 16.

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25. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jaisimha et al. ("Data Compression Techniques for Maps," IEEE Proceedings, 1989

SoutheastCon, pp. 878-883), Mairs et al. (US 6,304,928), Matsushiro (US 6,301,300), Cullen et al. (US 5,781,665), Imade et al. (US 5,872,864) and Kelly et al. (US 6,448,922) as applied to claims 13, 15 and 17, and further in view of Wendt (US 4,422,180).

Regarding claim 18, the combined invention of Jaisimha, Meirs, Matsushiro, Cullen, Imade and Kelly discloses

- a data compressor for receiving data bits representing the pixels comprising the graphical weather image and for producing a compressed data bit stream by compressing the data bits according to the number of successive pixels of the background color and for successive pixels of the information color according to a first bit group indicating the number of successive pixels of an information color and a second bit group indicating the information color from the plurality of information colors of each pixel indicated by the first bit group, and wherein the second bit field can specify any of the plurality of information colors for each one of the successive data pixels, and wherein a length of the first bit group plus the second bit group is variable as determined by the number of successive pixels of an information color and the number of bits required to designate one of the plurality of information colors for each pixel of an information color
  [Per the analyses of claims 1 and 13]
- a data decompressor for decompressing the recovered compressed bit stream for producing the recovered data bits representing the pixels comprising the geographical weather image, by determining the number of successive pixels of the background color and the color for each pixel of an information color from the plurality of information colors
  [Per the analysis of claim 17]

The combined invention of Jaisimha, Meirs, Matsushiro, Cullen, Imade and Kelly does not expressly disclose

- a carrier signal
- a modulator for modulating the carrier signal with the compressed bit stream
- a transmitter for transmitting the modulated carrier signal
- a receiver in the aircraft for receiving the modulated carrier signal
- demodulator responsive to the received modulated carrier signal for recovering the compressed bit stream

- a display responsive to the recovered data bits for displaying the pixels comprising the graphical weather image

However, Wendt discloses a signal transmitting apparatus particularly for aircraft that includes a transmitter, a receiver, a modulator, a demodulator and a display. [See Figs., 6 & 8, Col. 8, line 61 through Col. 9, line 30 and Col. 11, lines 9-10.]

The combined invention of Jaisimha, Meirs, Matsushiro, Cullen, Imade and Kelly are combinable with Wendt because they both have aspects that are from the same field of endeavor of data encoding/decoding.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Jaisimha, Meirs, Matsushiro, Cullen, Imade and Kelly with the teachings of Wendt by including a transmitter, a receiver, a modulator, a demodulator and a display. The motivation would have been to be able to communicate critical information to an aircraft and display the decoded information for the pilots to facilitate proper decision-making.

Therefore, it would have been obvious to combine Wendt with Jaisimha, Meirs, Matsushiro, Cullen, Imade and Kelly to obtain the invention as specified in claim 18.

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26. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jaisimha et al. ("Data Compression Techniques for Maps," IEEE Proceedings, 1989 SoutheastCon, pp. 878-883), Mairs et al. (US 6,304,928), Matsushiro (US 6,301,300), Cullen et al. (US 5,781,665), Imade et al. (US 5,872,864), Kelly et al. (US 6,448,922) and Wendt (US 4,422,180) as applied to claim18, and further in view of Marey et al. (US 3,916,436).

Regarding claim 19, the combined invention of Jaisimha, Meirs, Matsushiro, Cullen, Imade, Kelly and Wendt discloses all limitations of its parent, claim 18.

The combined invention of Jaisimha, Meirs, Matsushiro, Cullen, Imade, Kelly and Wendt does not expressly disclose

- wherein the transmitter is a television picture signal transmitter, and wherein the carrier signal is the carrier signal of the television picture, and wherein the television picture comprises an information interval during which picture information is transmitted and a vertical blanking interval during which no information is transmitted, and wherein the compressed data bit stream modulates the carrier signal during the vertical blanking interval

However, Corey discloses a TV signal transmitting apparatus that modulates the carrier only during vertical blanking period. [See the last seven lines of the abstract.]

The combined invention of Jaisimha, Meirs, Matsushiro, Cullen, Imade, Kelly and Wendt are combinable with Marey because they both have aspects that are from the same field of endeavor of data encoding/decoding.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Jaisimha, Meirs, Matsushiro, Cullen, Imade, Kelly and Wendt with the teachings of Marey by including a transmitter, a receiver, a modulator, a demodulator and a display. The motivation would have been to be able to communicate critical information to an aircraft and display the decoded information for the pilots to facilitate proper decision-making.

Therefore, it would have been obvious to combine Marey with Jaisimha, Meirs, Matsushiro, Cullen, Imade, Kelly and Wendt to obtain the invention as specified in claim 19.

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27. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jaisimha et al. ("Data Compression Techniques for Maps," IEEE Proceedings, 1989 SoutheastCon, pp. 878-883), Mairs et al. (US 6,304,928), Matsushiro (US 6,301,300), Cullen et al. (US 5,781,665), Imade et al. (US 5,872,864), Kelly et al. (US 6,448,922) and Wendt (US 4,422,180) as applied to claim18, and further in view of Waguri (US 6,370,278).

Regarding claim 19, the combined invention of Jaisimha, Meirs, Matsushiro, Cullen, Imade, Kelly and Wendt discloses all limitations of its parent, claim 18.

The combined invention of Jaisimha, Meirs, Matsushiro, Cullen, Imade, Kelly and Wendt does not expressly disclose

- wherein the display further comprises a stored image of the geographical boundaries of the graphical weather image, and wherein the geographical boundaries are displayed with the pixel display of the graphical weather image

However, Waguri discloses extracting boundary information and subsequently superimposing boundary information on another image. [See Abstract.]

The combined invention of Jaisimha, Meirs, Matsushiro, Cullen, Imade, Kelly and Wendt are combinable with Waguri because they both have aspects that are from the same field of endeavor of data encoding/decoding.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the combined invention of Jaisimha, Meirs, Matsushiro, Cullen, Imade, Kelly and Wendt with the teachings of Waguri by extracting boundary information and superimposing boundary information on another image (such as a weather map) for display. The motivation would have been to be able to preserve information necessary to reconstruct the boundaries of data (say, with background) which may otherwise be lost if the images has to be encoded for efficient transmission. [See Waguri, Col. 1, lines 10-22.]

Therefore, it would have been obvious to combine Waguri with Jaisimha, Meirs, Matsushiro, Cullen, Imade, Kelly and Wendt to obtain the invention as specified in claim 20.

Conclusion and Contact Information

28. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Penna et al. (US 6,301,389) – discloses run-length encoding for background as well as code format ("the second instruction" of claim 1) for color runs which contains information indicating the length and color of the run, the length of the code is variable as determined by the number of bits required to describe the colors [See Figs, 6 and 7]

29. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yubin Hung whose telephone number is (571) 272-7451. The examiner can normally be reached on 7:30 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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